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CLAIMS

- 1 A nutritional or pharmaceutical composition comprising:
a)-a protein fraction containing L-serine selected from the group consisting of L-serine, protein or peptides; and
5 b)-an energy metabolism precursor selected from glycocyamine (GA), equivalents thereof, and mixtures thereof, and
wherein the composition is free of glycine or if glycine is present within the composition, the weight ratio of L-serine to glycine after hydrolysis of the composition
10 is of more than 2.7:1.
- 2 A composition according to Claim 1, wherein the energy metabolism precursor is administered at a daily dosage of at least 0.2 g up to 4 g per day.
- 15 3 A composition according to either one of Claim 1 or 2, wherein the protein fraction containing L-serine, present within a nutrition or pharmaceutical supplement, is administered at a daily dosage of at least 1g per day.
- 4 A composition according to either one of Claim 1 or 2, wherein the protein
20 fraction containing L-serine, present within a complete nutrition or pharmaceutical composition, is administered at a daily dosage of at least 4.8 g per day.
- 5 A composition according to any one of Claims 1-4, wherein the energy metabolism precursor and the protein fraction containing L-serine are present in a
25 molar ratio of from 0.1:1 to 10:1.
- 6 A composition according to any one of Claims 1-5, wherein the composition further comprises creatine.
- 30 7 A composition according to Claim 6, wherein the energy metabolism precursor and creatine are present within the composition in a weight ratio of energy metabolism precursor:creatine of from 0.2:5.

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8 A composition according to any one of Claims 1-7, wherein the composition further comprises vitamins, preferably selected from vitamins B6, vitamins B12, folic acid, and mixtures thereof.

5 9 A composition according to any one of claim 1-8, wherein the composition further comprises a digestible food grade carbohydrate, preferably is maltodextrin.

10 10 A composition according to any one of claim 1-9, wherein the composition further comprises an aldehyde.

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11 A composition according to any one of claim 1-10, wherein the composition further comprises a mineral, preferably selected from magnesium, zinc, and mixtures thereof, more preferably is a mixture of magnesium and zinc.

15 12 A composition according to any one of Claims 1-11, wherein the composition is in a form selected from liquid form, powder form, emulsion form, suspension form, gel form, bar form, cookies, sweeties, preferably powder form.

20 13 Use of a composition as defined in any one of Claims 1-11 for increasing the creatine response within mammals muscle and methylation reaction capacity of organisms.

14 Use of a composition according to Claim 13, wherein said composition is administered to an athlete.

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15 Use of a composition according to Claim 13, wherein said composition is administered to disease affected persons or vegetarian persons, or elderly persons.

30 16. Use of a composition according to Claim 13 for the stimulation and/or increase of anabolic processes and/or the providing of an increase of the lean body mass, and/or prevention and/or treatment of muscle catabolism or even cachexia and/or for the improvement of the energy status of tissues and cells.

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17. Use of a composition according to Claim 13 for the prevention and/or treatment, in particular prevention of disorders selected from cancer, neurological disorders, migraine, allergy, insulin resistance which improves glucose tolerance and decreases side effects of diabetes type II, cardiovascular and cerebrovascular disorders,
- 5 hypercholesterolaemia, hypertension, subfertility, uncontrolled inflammation processes, pneumonia, and mixtures thereof, and/or prevention of hearing loss, and/or improvement of wound healing, and/or improvement of gut barrier function and/or prevention of sepsis.

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